

Massachusetts Institute of Technology  
C. S. Draper Laboratory  
Cambridge, Massachusetts

LUMINARY Memo #224

To: Distribution  
From: C. W. Schulenberg, P. Rye  
Date: 22 June 1971  
Subject: Revision 1 of Erasable Memory Program for Backup of DSKY Keys

References:

1. LUMINARY Memo #220, "Erasable Memory Program for LUMINARY Rev. 210 to Provide Backup for DSKY Keys", C. W. Schulenberg, 4 June 1971.
2. LUMINARY Memo #223, "Correction to LUMINARY Memo #220", C. W. Schulenberg, 17 June 1971.

The erasable memory program described in this memo is intended to supercede the earlier version that was presented in References 1 and 2. This new version affords the following advantages over its predecessor:

1. Requires less memory space. The new program fits entirely within VAC Area 5.
2. Requires less CPU time. The new program requires a basic 1.46% slice of CPU time as compared to the 2.63% of the earlier version.
3. Requires two fewer V71 uplink sequences.

These improvements were made possible as a result of a change in the restart protection logic that was suggested by P. Rye of the Draper Laboratory. Most of the narrative contained within Reference 1 is still applicable and will not be repeated here.

Loading, Activation, and Etc.

Memory Location

<u>Load 1</u>	V 71 E	
	20 E	
	660 E	
	E	660
	34746 E	661
	54660 E	662
	34734 E	663
	6 E	664
	2032 E	665
	56703 E	666
	10000 E	667
	672 E	670
	712 E	671
	10703 E	672
	712 E	673
	34346 E	674
	5063 E	675
	V1 N1 E 660 E	
	if R1 = 660,	
	V 33 E	

<u>Load 2</u>	V 71 E	
	20 E	
	676 E	
	2057 E	676
	60101 E	677
	30730 E	700
	74337 E	701
	710 E	702
	400 E	703
	E	704
	E	705
	E	706
	E	707
	50064 E	710
	54154 E	711
	10752 E	712
	731 E	713
	V 33 E	

<u>Load 3</u>	V 71 E	
	22 E	
	714 E	
	5355 E	714
	7011 E	715
	77777 E	716

722 E	717
10100 E	720
731 E	721
34746 E	722
54660 E	723
30727 E	724
54335 E	725
5263 E	726
661 E	727
KK E	730
34770 E	731
26320 E	732
3532 E	733
V 33 E	

KK:	01 = "1"	20 = "0"
	02 = "2"	21 = "VERB"
	03 = "3"	22 = "ERROR RESET"
	04 = "4"	31 = "KEY RELEASE"
	05 = "5"	32 = "+"
	06 = "6"	33 = "-"
	07 = "7"	34 = "ENTER"
	10 = "8"	36 = "CLEAR"
	11 = "9"	37 = "NOUN"

To activate: V21 N1 E 335 E 661 E

To monitor for operation: V11 N1 E 320 E  
(examine REDOCTR)

To alter Keycode: V21 N1 E 730 E KK E

To deactivate: V21 N1 E 335 E 3532 E  
then select some program via V37 to disengage hardware  
restart protection

### Program Code

Location	Tag	Code	Octal
		<u>Vac Area 5</u>	
660	VAC5USE	OCT 0	00000
661		CA ZERO	34746
662		TS VAC5USE	54660
663		CA BIT9	34734
664		EXTEND	00006
665		RAND CHAN32	02032
666		XCH MULTFLAG	56703
667		CCS A	10000

670		TC	+2	00672
671		TC	CHKPHASE	00712
672		CCS	MULTFLAG	10703
673		TC	CHKPHASE	00712
674		CA	PRI030	34346
675		TC	NOVAC	05063
676		2CADR	CHARIN	02057
677				60101
700		CA	KEYBKUP	30730
701		MASK	LOW5	74337
702		TC	AFTGOLOC	00710
703	MULTFLAG	OCT	400	00400
704	GOLOC -1			
705	GOLOC			
706	GOLOC +1			
707	GOLOC +2			
			Erasable locations used by RESTARTS routine	
710	AFTGOLOC	INDEX	LOCCTR	50064
711		TS	MPAC	54154
712	CHKPHASE	CCS	PHASE1	10752
713		TC	COMMEXIT	00731
714		TC	PHASCHNG	05355
715		OCT	7011	07011
716		OCT	77777	77777
717		OCT	722	00722
720		OCT	10100	10100
721		TC	COMMEXIT	00731
722		CA	ZERO	34746
723		TS	VAC5USE	54660
724		CA	EPROGAD	30727
725		TS	DNTMGOTO	54335
726		TC	TASKOVER	05263
727	EPROGAD	OCT	661	00661
730	KEYBKUP	OCT	KK	000KK
731	COMMEXIT	CA	1SEC	34770
732		ADS	REDOCTR	26320
733		TC	DNPHASE2	03532